

INDIAN CANES IN SOUTH AFRICA

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On my way down the East-coast of Africa I visited the experiment station of the South African Sugar Association at Mount Edgecombe, and I thus had an opportunity of learning something about the research work being done on sugarcane in the Union. In the course of my stay at Durban I also saw, in a general way, the agricultural conditions prevailing in the main sugar-cane growing area in Natal.

It will be remembered that the Uba cane, which is the only variety grown on any scale in South Africa, was imported some years ago from Northern India, and my visit was of interest in providing an opportunity of seeing the conditions under which this Indian cane has become acclimatised and grown almost to the exclusion of all others. Recently a number of Coimbatore seedlings, which are closely related to the class of cane to which Uba belongs, have been under trial, one of which has already been released for cultivation, and although it is rather early to say how far these seedlings are likely to replace Uba, there is every reason to believe that the work at Coimbatore will be of great value to the industry in South Africa.

In Natal, the hot weather extends from September to May, when the atmospheric temperature rises up to 100 degrees in the shade, but generally the maximum does not exceed 95 degrees. The annual normal mean temperature is about 67 degrees, and in July ground frosts are not uncommon. The rainfall varies from 35 to 50 inches, about 65 to 70 per cent. of which falls between the months of August and May. The rainfall therefore is well distributed, and more so than in South India.

The sugarcane belt extends approximately from Port Shepstone to Umfolosi, a distance of about 250 miles. On the South coast, in the neighbourhood of Durban, sugarcane is cultivated on undulating hills in marked contrast to South India, and such conditions may be said to be fairly typical. Many types of soil appear to be represented, but deep sandy loams preponderate. Although the surface geology of Natal generally is formed by shales, conglomerates, and sandstone, there is an almost universal distribution of volcanic rock, the disintegration of which has resulted in enriching what would otherwise be a poor soil.

To those who desire more detailed information regarding climatic conditions in the area with which we are concerned, and detailed information about the growing of sugarcane and the manufacture of sugar, the South African Sugar Industry Year Book will be found useful. But this note will be confined to a few observations which may be of interest to those who are studying the economics of sugarcane cultivation, particularly in relation to the class of cane represented by the

new Coimbatore thin seedlings. The cultivation of what may be termed "a poor man's cane" has received increasing attention in recent years in the I Circle* which has necessitated somewhat drastic changes in methods of cultivation, manuring, and irrigation. Although conditions in Natal are very different to those prevailing on the Eastcoast of the Madras Presidency, experience in South Africa, where the crop is grown generally without irrigation, may be of assistance in evolving methods of cultivation suitable for South Indian conditions where thin canes are grown.

In Natal under unirrigated conditions, except on land that receives seepage, sugarcane takes 20 to 24 months to mature, whereas on the heavier class of soil under irrigation the period is only 8 to 12 months. In the former case the crop stands through a period of light rainfall in June, July, and August amounting on an average to about 3.5 inches, and during the latter month the mean daily temperature is about 60 degrees. These local conditions cause growth to be stationary, and a comparatively dry period at a time when atmospheric temperatures drop, does not cause flowering or any other indication of ripening.

The distance of planting is usually four and a half to five feet, and owing to the long period no difficulty is experienced in providing immature cane for seed purposes. Setts are left untrashed, and are usually nine to fifteen inches in length, and although ants are a pest, this practice does not appear to cause appreciable loss. The condition of the canes generally, as might be expected, is superior to those grown under typical wet-land conditions in S. India.

Although deep ploughing up to twelve inches is generally considered preferable to more shallow tillage, large areas are planted in less depth of tilth. Furrows are opened in the usual manner by the use of double mouldboard ploughs. There appears to be some doubt about the effect of depth of planting on germination and the vigour of the plants, and I learnt that setts are put down at a depth varying from one to six inches. The wide variation in types of soil to which I have referred is doubtless one cause of these differences. Light multiple-tined single row cultivators are in general use, and weeding by hand is done in the lines.

It is usual to take from four to six crops in succession, but no general rule appears to be recognised. On the bigger estates when the tonnage falls below a given figure, the land is ploughed up and put under a green manure crop for a period of one year, and subsequently again planted to cane.

In view of the relatively small number of live stock, supplies of manure, as in parts of S. India, are scanty. Commercial or artificial manure is in almost general use, and is applied in the form of complete

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fertiliser at the rate of from 400 to 800 lbs. per acre. On the experiment station at Mt. Edgecombe a normal dressing consists of 480 lbs. super, 120 lbs. ammonium sulphate and 60 lbs. potassium chloride, per acre.

Under estate conditions an average yield of 20 to 25 tons of stripped cane per acre is usual, although under the best conditions over 30 tons may be obtained. The juice analyses out at about 13 per cent. sucrose.

At the present time a number of Coimbatore seedlings are under comparison with Uba under unirrigated conditions. In 1930-31, Co 205 and Co 210 were both found to be superior to Uba in yield of sugar, the former by 18 and the latter by 14 per cent. The thicker seedlings, however, show more promise, and a recently harvested crop of Co 281 gave a difference in yield of sugar over Uba amounting to 26.6 per cent. Co 213, up to date, has not proved superior to Uba either in tonnage of cane or yield of sugar. In a recent quantitative trial of a plant crop Co 290 gave 33 tons of stripped cane per acre, or 20 per cent over Uba and 31 per cent more sugar.

It will be seen that good yields have been obtained and that only 25 lbs. nitrogen per acre is used compared with about 100 lbs. under our conditions. It may be noted here that as a result of experience on the station at Anakapalli, the quantity of manure applied for some Coimbatore seedlings has been progressively reduced, and unirrigated crops of Co 213 on wet-land have yielded up to 30 tons of cane per acre. In one case the quantity of nitrogen applied per acre was no more than 28 lbs.

I saw a number of crops of Coimbatore seedlings including Co. 290. At Anakapalli Co. 290 and Co. 281 on wet land both tend to grow tall and to develop a spreading habit even under restricted irrigation, but in Natal these canes grow to a height of about 10 feet only and show no inferior habit. This may be attributed to slow growth, absence of irrigation, light manuring, and to a less extent wide spacing.

A series of inoculation experiments to test the susceptibility of certain of the Coimbatore seedlings to mosaic disease are in progress, and although incomplete, useful information has already been obtained. The preliminary tests at the Herbarium in Durban are being continued under field conditions. Over a period of three years Co. 290 has proved to be almost entirely immune, although Co. 281 and Co. 314, and particularly the latter, have been found to be susceptible.

Experience at Mount Edgecombe shows that none of the P. O. J. canes that have hitherto been tried, which include P. O. J. 2714, P. O. J. 2725, P. O. J. 2727 and P. O. J. 2878, are suitable for unirrigated conditions.